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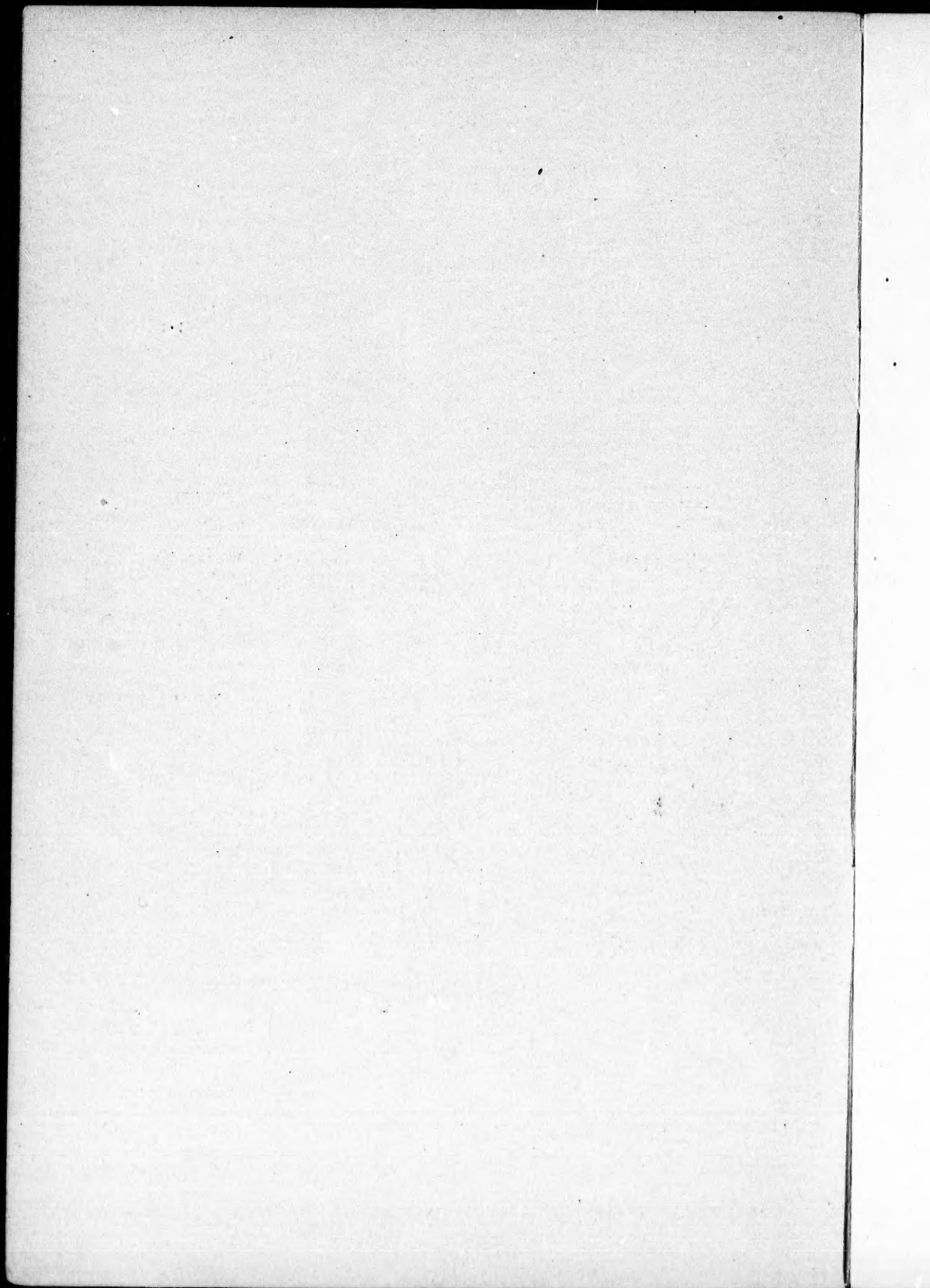
REMARKS ON A CASE OF PARANEPHRITIC ABSCESS,
WITH RUPTURE INTO THE STOMACH.

BY

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Nephrolithiasis; pyonephrosis; para-nephritic and retroperitoneal abscess; rupture into stomach; gangrene of spleen and pancreas; acute hepatitis and portal pylephlebitis; acute suppurative colitis; right acute parenchymatous nephritis; left empyema and collapse of lung; pure culture of B. col from abscess.

The case which I have an opportunity of recording, through the kindness of Prof. James Bell, presents several features of clinical interest, and in regard to its termination, namely discharge of a large para-nephritic abscess through the stomach, must be regarded as being of the greatest rarity, if not indeed absolutely unique.

Mrs. J. R., æt. 30, was admitted to Dr. Jas. Bell's wards at the Royal Victoria Hospital, on July 20th, 1897. Her illness began in May, 1896, with a dull aching pain in the left lumbar region which was felt into the left axilla, and was only relieved by assuming a dorsal or left lateral position. Prior to her admission there were one or two intermissions for a fortnight or so, but when present the pain was fairly constant. About June of 1897, she further began to suffer from an attack of sharp, continuous pain in the left groin, which lasted three days, being most marked at night. This was accompanied by nausea. A week later she had a similar attack, associated with fever and sweating, which lasted for a week. Between June 20th and 30th, she had five rigors with profuse sweating. For about a year the patient had noticed that her urine contained a white ropy sediment, and became thick and greenish. There was neither pain on micturition, frequent passage of urine, nor hæmaturia.

Personal History.—The patient had the usual diseases of childhood; 12 years previously she suffered from pneumonia on the left side. In January, 1896, she gave birth to a child 3 weeks premature. Before delivery and after she had several convulsions. There was no history of renal colic.

Family History.—No inherited taint.

Condition on Admission.—The patient was emaciated and anæmic, with slight sub-icteroid hue of the sclerotics. She complained of a dull aching pain in the left lumbar region, which was aggravated by lying on the right side and associated with a dragging sensation in the left loin. In the left side of the abdomen was a large fluctuating tumour which extended vertically from a line one inch above the umbilicus to the 5th rib in the mammary line, and laterally to a point two inches to right of median line, shading off posteriorly. The tumour was most prominent in the epigastrium, was dull on percussion, and the dull area was not movable. The flanks were clear. Slight pulsation in the left intercostal spaces was noted, synchronous with the heart impulse. This dullness merged off insensibly into the liver and heart dullness, and posteriorly, was continuous with a dull area on the thoracic wall. This area on percussion gave an impaired note from the 6th to the 7th interspace, and then an absolutely flat note from that point to the base of the lung merging at that point into the tumour dullness. In the left loin posteriorly the subcutaneous tissues were distinctly boggy and œdematous.

The accompanying figures show very well the extent of the dull area.

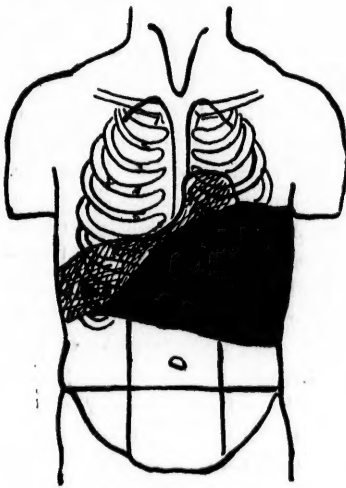


Fig. I. Front View.

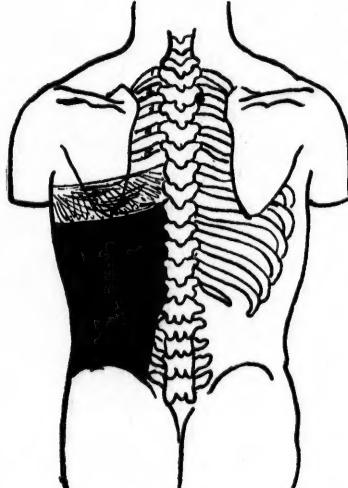


Fig. II. Back View.

In fig. 1, the stippled portion represents the liver and heart dullness in fig. 2, the area of relative dullness over left lung.

Above the level of the 6th rib posteriorly, the note was hyper-

resonant. From the apex to the 7th rib the breath sounds were harsh and expiration prolonged; over 7th and 8th ribs blowing breathing was heard, and below this point the breath sounds were only faintly audible. There was no cough or expectoration. The movement of the diaphragm on the left side was much impaired. Right lung normal. The impulse of the heart apex was diffuse, being palpable in the 3rd and 4th spaces. The vertical cardiac dullness was not increased, but the right border of heart dullness began at the mid-sternal line. No murmurs.

The urine was acid, of a rich amber colour, turbid, sp. gr. 1020. The deposit was slightly flocculent consisting of pus, hyaline and granular casts, and a few red-blood corpuscles. A decided trace of albumen was present. No sugar.

On July 22nd the chest was aspirated in the 9th interspace about the posterior axillary line and thick pus and bloody fluid were obtained. A resection of portions of the 9th and 10th ribs was performed and the pleural cavity opened. The lung was felt about a finger's breadth above the incision. A small amount of clear fluid came away. In the diaphragm was a small puncture, evidently made by the exploring trocar, and through it pus was oozing. The incision was enlarged upwards and the visceral and parietal layers sutured together. An incision was made through the diaphragm and pus was seen coming from the region of the left kidney. The wound was packed with gauze and dressed, it being intended to open into the loin later.

July 23rd, The dullness over the lung posteriorly had largely cleared up, but swelling in the epigastrium was still prominent.

Aug. 7th. Swelling in epigastrium was distinctly smaller and patient vomited about 2 ounces of thick brownish fetid material.

Aug. 8th. Swelling over epigastrium was absent and the note tympanitic. Vomited again. Material examined microscopically gave the appearance of broken down pus.

Aug. 9th. Great nausea. Involuntary stools.

Aug. 10. Delirious. Involuntary, tarry, stool. Vomited blood-stained fluid and one small clot. Death.

Autopsy.—Twelve hours after death. (Performed by A. G. N. and H. K. Wright).

Body that of a young female, with usual signs of death. Great emaciation. Post-mortem rigidity complete. Considerable lividity. On opening abdomen, muscles were small; subcutaneous fat absent. A small amount of clear fluid was present in the pelvis.

Right Lung—Pale and crepitant throughout. Lowest-lobe adherent posteriorly.

Left Lung—Upper lobe generally adherent with old adhesions. Lower lobe completely carnified. Surface covered with flakes of purulent lymph. The diaphragm

was blackened and infiltrated. The left pleural cavity contained about eight ounces of mixed pus and blood.

Heart.—Muscle pale.

Spleen.—Weight 255 grammes. Adherent posteriorly and to diaphragm with recent loose adhesions. The inner lower surface was covered with purulent lymph, and in lower angle was an area of necrosis, the size of a filbert, with purulent broken down walls, but with an attempt at a pyogenic membrane. The spleen pulp was soft and congested.

Right Kidney.—Cortex pale and fatty looking, and swollen. On section, pale and flabby. Pyramids not well defined from cortex. Acute nephritis.

Bladder.—Distended and slightly congested.

Liver.—Weight 1055 grammes. On section pale, friable and fatty. Left lobe shewed condition of acute suppurative hepatitis and also suppurative portal pylephlebitis.

On examining the left side of the abdomen a large pus collection was seen to the inner side of the kidney. This was bounded above by the spleen, the diaphragm, and the cardiac end of the stomach, was walled in by fairly firm adhesions at the median line, and extended downwards to about the middle of the left kidney. The lower portion of the abscess on the right side was bounded laterally and slightly anteriorly by the descending colon, which was fairly firmly adherent.

Intestines.—The portion of the descending colon, bounding the abscess cavity, presented greatly thickened walls, with diffuse suppurative infiltration, but no perforation. It contained blood-stained clotted contents.

Stomach.—About half filled with mixed pus and blood. At the dependent part of the cardia, close to the spleen, was a circular perforation about 10 mm. in diameter. That this was due to perforation from outside the organ was evidenced by the fact that the erosion was of the shape of a short truncated cone with terraced walls, the base being towards the serosa and widely eroded, while the opening in the mucosa was much smaller, the infiltration less and the mucosa freely moveable, with sharp edges. The mucous membrane showed a condition of diffuse acute inflammation.

Pancreas.—The tail of the pancreas was contained in the abscess cavity; part of it had sloughed off and the rest was necrotic and gangrenous. The head was apparently normal.

Further examination showed that the peri-nephritic abscess was a direct extension of a large retro-peritoneal pus collection, which had burrowed from behind the left kidney upwards into the diaphragm and downwards along the ilio psoas to a point one inch below Poupart's ligament where it presented, laying bare the iliac vessels. The retro-peritoneal glands were generally enlarged, but not suppurating.

Left Kidney.—Was double the normal size, being converted into a pyonephrotic sac, distended with thick creamy greenish pus. At the proximal end of the ureter was a calculus the size of a small hickory nut, but not impacted. About 20 smaller calculi were found in the calices. Posteriorly the kidney was necrotic, but there was no direct communication between the pelvis and the retroperitoneal tissues.

Cultures from the pus gave pure growths of the colon bacillus.

To sum up, then, in this case we were dealing with a large fluctuating tumour in the left kidney region, associated with spontaneous and elicited pain, the boundaries indefinitely palpable, accompanied by hectic fever, rigors and sweating, cedema of the subcutaneous tissues in the left loin posteriorly, pus and casts being present in the urine. On exploratory puncture pus was found coming from region of the kidney, and shortly before death vomiting of purulent and blood-stained material occurred. Significant also was the fact that coincident with the vomiting of broken down purulent material, the prominence in the epigastrium disappeared.

In the presence of these symptoms and physical signs it was hardly possible to escape the conclusion that a peri- and para-nephritic abscess was present, which had ruptured into the stomach, although from what source arising it was not so simple to decide.

In such a case so many nice points in the differential diagnosis come up that it may not be without interest to briefly refer to them.

When a fluctuating tumour is present in the kidney region it has to be determined, first, whether the tumour is formed of a distended kidney simply, such as would occur in hydronephrosis, a pyonephrosis, simple or tubercular, a congenital cystic kidney, or an echinococcus cyst; secondly, a paranephritic abscess associated with suppuration in the kidney itself, as in pyonephrosis and nephrolithiasis, tuberculosis, and embolic suppurative nephritis, a suppurating carcinoma of kidney, suppurating echinococcus cysts, or actinomycosis; thirdly, a para- or perinephritic abscess arising from a source outside of the kidney, such as traumatism, perforative appendicitis and perityphlitis, caries of the spine, empyema, and rarely liver abscess.

The first group of cases are characterised by a more defined and bounded tumour mass of rounded form, without involvement of the abdominal wall and skin. Where the kidney is much distended the colon may often be made out crossing the tumour in front diagonally. Such tumours are not movable. Here the pleura would not be involved.

In doubtful cases the more circumscribed the tumour is, the more it speaks for kidney abscess, especially if there is no oedema of the parietes. When deep-seated suppuration is present the mass at first may be hard, resistant and indurated, later elastic, and finally, as the abscess increases, fluctuation may be made out, especially if the tumour is palpated with one hand in front and the other in the loin behind.

Having thus decided that a para- or perinephritic abscess exists, it is necessary to discover its origin. A careful examination of the spine should be made for points of tenderness or pain on movement to eliminate carious disease. Until secondary infection sets in such cases run along without fever, or when present it is slight and continuous. Psoas abscess arising from paranephritic suppuration occurs very late in the course of the disease, and is never so prominently to the fore as in the case of psoas abscess from caries. In the latter, too, the pain and the tumour are much more marked at the region where the pus presents. When empyema is the cause this can usually be easily differentiated from the history and the presence of a pleural effusion early in the disease.

Appendicitis and paratyphlitis only come into mind when the

tumour is on the right side. The history of these cases is of great value, and the position of the abscess at first is so different from that in paranephritic abscess that it is not very difficult to decide. Later on, however, it may be impossible. In a paratyphlitic abscess fluctuation is felt deeper down, and a slight tympany may be felt over the dull area on light percussion.

Liver abscess bursting into the peritoneum is a rare event. Such abscesses may be suspected from a history of pain over the liver, with or without enlargement, with or without icterus, and with rigors, sweating and a remittent or intermittent temperature curve, especially if we can establish a cause, such as tropical dysentery, traumatism to liver or cranium, gastric ulcer, typhlitis, gangrene of lung or malignant endocarditis.

We are justified in diagnosing paranephritic abscess if the following are present: pain in kidney region, either localised or radiating, intermittent fever, a fluctuating tumour in the loin with *œdema and reddening of the neighbouring abdominal wall*, and possibly pain on contraction of the psoas muscle. If the colon is involved, melæna may be present.

When there is any doubt as to whether pus exists, a puncture with a trocar is indicated. In this connection, it might be mentioned that a retroperitoneal lipoma or lipo-myxoma may cause a fluctuating mass in the kidney area. This usually grows very slowly, without fever, and attended by simple emaciation without cachexia. It can often be felt to be lobulated and is generally crossed by the colon, and, when punctured, no fluid can be withdrawn.

Having determined that the abscess is associated with a gross lesion of the kidney, it remains to differentiate between the various conditions before mentioned.

Actinomycosis and echinococcus cysts are so rare in this country as hardly to deserve discussion. An examination of the contained fluid will usually tell.

Carcinoma is also rare. This gives rise to a hard tumour, with perhaps soft areas to be felt in it. Metastases should be looked for, the cancerous cachexia and an exploratory puncture may decide its nature.

The vastly more important conditions to be discussed are nephrolithiasis and tuberculosis.

A history of renal colic is, of course, significant, but is often absent, as in the present case. In rare cases a stone might be felt on palpation or on exploratory puncture. The X rays might also reveal the presence of a calculus.

Tuberculosis of the prostate, vesiculæ seminales, testes, epididymes, ovaries, tubes and bladder should be looked for, as some of these lesions are almost invariably present in tubercular pyonephrosis. A careful search for tuberculosis in the lungs should also be made.

The most important information is obtained from the examination of the urine. The points to be looked into are the reaction, the presence of pus, blood, gravel, fragments of tissue, and presence of bacteria.

In suppurative nephritis the reaction is at first acid, but may become alkaline. Schmidt and Aschoff found that when the *B. Coli* was present alone, the urine did not become alkaline, but this only occurred when other bacteria, such as staphylococci, were present either alone or associated with the colon bacillus.

The amount of albumen is always small depending upon the presence of the contained pus. Casts are usually absent, but may be found. Blood is almost always present. A sudden discharge of pus into the urine may be due to the rupture of a small abscess into the pelvis of the kidney, a sudden dislodging of a plug in the ureter, or the rupture of a peri-nephritic abscess into the urinary ducts. Rarely portions of kidney tissue may be recognized.

The urine in pyelo-nephritis does not differ much from the last case, but we may expect to find kidney epithelium and sometimes casts, in addition to pus and blood.

To distinguish kidney-abscess from a suppurative pyelitis is not always possible, as in both a sudden discharge of pus into the urine may occur. The presence of casts and kidney tissue would suggest the former condition.

The urine in para-nephritis, of an origin extraneous to the kidney, is normal, except in the case where the abscess bursts into the pelvis of the kidney. In the latter event the urine is for a long time free of pus; pyuria only occurs late on in the process.

In a para-nephritis resulting from pyelitis, pyelo-nephritis, or tuberculosis of the kidney, pus is of course present.

The urine of congenital cystic disease is that of chronic interstitial nephritis.

The urine in hydronephrosis may be normal, or there may be a sudden increase in the amount of urine associated with a corresponding decrease in the size of the tumour (intermittent hydronephrosis). Such urine is of low specific gravity and usually contain a small amount of albumen, with epithelial elements derived from the pelvis.

When nephrolithiasis is present, the urine is almost always acid. The presence of gravel or small urinary calculi is conclusive if associated with colic. Bloody pus and epithelial cells are also present.

As renal colic can be caused by the passage of other bodies besides calculi, one would not be justified in diagnosing nephrolithiasis from hæmaturia, colic, and signs of pyelitis, unless concretions were found in the urine as well. To exclude vesical calculus, the character and localisation of the pain is suggestive, being usually not confined to one side as in nephrolithiasis. The reaction is of no importance, as alkaline urine can be found in stone in the kidney. Examination with the sound is necessary. Also in nephrolithiasis the pus is mixed with the urine as it flows, while in cystitis it is mostly passed at the end of the act of micturition. Catheterisation of the ureters will often give important information.

In tuberculosis of the kidney the urine is acid, cloudy, contains albumen, and the sediment consists of pus, blood, epithelium and detritus. Sometimes shreds of tissue and elastic fibrils are found. A certain means of differential diagnosis is only at hand in the recognition of the tubercle bacilli in the urine. A few isolated bacilli may be found in miliary tuberculosis of the kidney, but this is rare, and the rule is that even in widespread tuberculosis elsewhere the urine is free, unless the kidneys are the seat of a diffuse caseous process. We are only justified in diagnosing the latter condition, if after repeated examination of the urine, the bacillus of tuberculosis is constantly present. With respect to the technique of this examination, I might refer to an important practical point, the differentiation of the tubercle bacillus from smegma bacillus. Our experience at the Royal Victoria Hospital, based on the investigations of Dr. C. B. Keenan, is in accord with that of Grünbaum, who found that in the majority of urines taken from all cases, the smegma bacillus was present. In the urine of females this bacillus was present oftener than in that of males. Also in catheter specimens it was almost always absent. The method of staining is of great importance. Both the smegma and the tubercle bacillus stain by Gabbett's method and can scarcely be differentiated under the microscope. A point of difference lies in the fact that the smegma bacillus is decolorized by absolute alcohol while the tubercle is not.

The simplest method is to stain in the usual way with carbol-fuchsin heated over the flame and then to differentiate with a saturated alcoholic solution of methylene blue applied for five minutes. By this method (Weichselbaum's) only the tubercle bacilli are stained. So that by using catheter specimens and staining by this method we have a certain means of determining the presence or absence of the B. tuberculosis.

With a careful attention to the history, and an examination on the

lines previously indicated, a diagnosis can often be made, but in the absence of one or more of the leading factors it may be impossible to do so. A careful and repeated examination of the urine should be made, and where deep seated suppuration is suspected, exploratory puncture is indicated. Among the more remote signs of a burrowing abscess in the retro-peritoneum may be mentioned paraplegia, neuralgic pains in a limb, anæsthesia, and thrombosis of the iliac vessels.

With regard to the etiology of abscesses in the kidney region, it will be gathered from what has been already said that many factors come into mind as the exciting cause of the condition. But besides those mentioned, a few of the so-called primary cases have been found to be sequelæ of the infective fevers, notably typhoid, scarlatina and smallpox; a few are said to be due to exposure to cold. By far the most frequent cause, however, of the primary cases is traumatism, from falls, crushing, wounds, &c. In many cases, however, no cause can be assigned.

The most complete discussion of the subject which I have met with is an article by G. Nieten (*Deut. Arch. f. Klin. Med.*, Bd. XXII., s. 451). Unfortunately owing to the fact that Koch's discovery of the tubercle bacillus was not then published, the cases cited are likely to be misleading, inasmuch as the conditions of suppurative nephritis and tuberculosis, regarded as etiological elements, are probably often confused.

Nieten tabulates in all 166 cases which he was able to collect from the literature previous to that time (1878) and gives particulars of 6 other cases.

Traumatism was put down as the cause 26 times; suppurative nephritis (pyelonephritis), 21 times; nephrolithiasis, 14; exposure to cold, 11; unknown cause, 24; caseous renal tuberculosis, 3.

Among the rarer causes were pyelitis 6 times; echinococcus, 4; strongylus gigas, liver abscess, suppurating cysts, cholelithiasis, abscess of ligamentum latum, and caries of spine, 2 each; typhoid, carcinoma, perforation of colon ascendens, of colon descendens, perforation of cæcum, and perityphilitis, once each. Of the remaining cases the cause was doubtful.

Owing to the loose cellular tissue about the kidney the abscess is usually single, of large extent, and often develops rapidly. In a few cases, usually pyelitis or pyelonephritis, multiple small abscesses develop and may fuse or undergo spontaneous absorption, in the latter case resulting in fibrosis and contraction of the affected area. When operative interference is not resorted to early, the abscess burrows in the retro-peritoneal issue and usually points either in the loin or at

Poupart's ligament. Rarely it presents below the gluteus maximus, between the biceps and sartorius, or at the inguinal ring. Perforation into the cavities of the body and other hollow viscera occurs less frequently. Perforation into the colon is the most frequent and a relatively happy result with regard to care. In Nieden's series it occurred 13 times. Duffin regards it as a more common event even than external rupture.

Rupture into the pleural cavity is the next commonest event, being noted in 8 cases. If the lung is adherent to the diaphragm the pus may discharge through a bronchus. This occurred 7 times. Perforation into the peritoneal cavity is excessively rare, occurring only 4 times. This is due to the fact that abundant limiting adhesions are usually formed.

Perforation into the urethra, bladder and vagina occurred in one case each.

Perforation into the stomach, mainly on account of which the present case is placed on record, seems to be unknown. It did not occur in any of Nieden's series. Rayer, indeed, mentions it as occurring, but Nieden states that he did not meet with any example of it recorded.

A careful search through subsequent literature has failed to reveal any such, so that we must conclude, at least so far as our information goes, that the case here recorded is unique.

